Chapter 3 : Process for Selecting an ERP System

Susan E. Bristow, Mary M. Dunaway (University of Arkansas)

The purpose of this chapter is to understand why an enterprise selects an ERP, the ERP selection process, and the steps involved in executing the process.

3.1 Introduction

An ERP acquisition is considered a high expenditure activity that consumes a significant portion of a company's capital budget. Why? If the purchase is made and turns out not to be a good fit, it can adversely affect a company's business in many different areas and on many different levels (Verville, Bernadas, & Halingten, 2005). More importantly, selecting an inappropriate ERP system is a major reason why most ERP implementations fail (Lall & Teyarachakul, 2006). Hence, the wrong ERP selection can severely jeopardize a company's operational performance and its very existence (Lindley, Topping, & Lindley, 2008). Therefore, making the right choice during ERP software selection can carry a high level of risk and uncertainty for a company. Whether a company size is small, medium, or large the process for selecting an ERP system can be tailored to a company's specific business objectives and goals. A wide variety of ERP systems have been developed to enable companies to become more competitive by integrating almost all business functions that use industry best practices onto a common single database. Thus, the process can be tedious, lengthy, and must be conducted with great care.

3.2 Basic Concepts and Definitions

Several concepts and definitions are important to facilitate understanding of the process for selecting an ERP system. Many of the terms are typical of any software procurement process that is undertaken, regardless of the type of application software. This by no means is a comprehensive list of terms, but are concepts and definitions most often used in the ERP software acquisition process.

The **ERP module** is a specific application encompassing all the features of a particular business function which may include, but is not limited to, transactions, data exchange, reports, workflow, and processes within the ERP system. For example, the accounts payable module's purpose is to process the value of goods and services acquired by a company that have not yet been paid for. Functions such as create a vendor invoice, process payments to a vendor, process vendor tax statements, and maintain a list of vendors are all common activities found in this type of module.

There are several types of vendors that provide ERP software applications and are sometimes characterized as **best of breed or niche market** software application vendors. Best of breed vendors are coined the best software applications of their type. These types of applications are typically isolated to one process or part of a process (Magal & Word, 2009). Often companies and organizations want to purchase software from different vendors to obtain the best solution for each application area; for example, a supply chain package from one vendor and a financial package from another. While ERP vendors provide a wealth of applications for the enterprise and advertise their integrated system as the superior solution, every module may not be best-of-breed.

Niche market vendors are independent software vendors who have a unique and specific software application focus. Typically a niche market software vendor provides highly specialized applications for a particular business industry or function to satisfy specific customer needs.

Value-Added Reseller (VAR) is a type of vendor that takes an existing product, and adds its own "value", usually in the form an integrated software application product or complete "turn-key" solution. For example, an ERP vendor may sell the ERP software application and bundle in value-added services, such as additional implementation support, training delivery, or customized programming just to name a few.

The **software acquisition** process has several terms that are standard across industries and are common to any procurement process. Listed below are a few of these terms and how they are defined.

Request for Proposal, most often referenced as RFP, describes a feature and function list of how the company will operate or function (Umble, Haft, & Umble, 2003). Additionally, any applicable vendor instructions, terms and conditions, and forms to complete are included in the RFP. The complete RFP is sent to the ERP vendor for a response.

Request for Information (RFI) is a formal request to the ERP vendor to acquire information about the ERP software solution. A typical RFI would request a "fit" response to the company's requirements, specific criteria questions relating to the company's business, and the ERP software product information.

Request for Quote (RFQ), sometimes referred to as Invitation For Bid (IFB), is the standard business process for inviting vendors to bid for the application software. The RFQ helps a company leverage the ERP vendor selection process' competitive nature to negotiate the best possible purchase deal.

Total Cost of Ownership (TCO) provides visibility of all costs associated with the acquisition of the ERP software solution. Usually these costs include the direct and indirect, maintenance, hardware, and any future cost related to the acquisition (Burns, 2007).

Conference Room Pilot (CRP) or boardroom pilot is often used to demonstrate a company's business requirements with the potential ERP application. The CRP offers a way for the ERP vendor to demonstrate an understanding of a company's requirements, and for the company to better understand the ERP system before signing a contract to purchase.

Proof of concept typically happens once the vendor list is narrowed down to two or three choices. It is a process where a script is provided to the vendor for one or more strategic business processes that the vendor must demonstrate.

Scalability is an item or concept's ability to adjust to increased requirements.

Service Level Agreement (SLA) is a type of contract that describes the partner relationship between a software vendor provider and a company, usually defined in measureable terms to create a common understanding of services, priorities, and responsibilities.

Software Maintenance Agreement (SMA) is a type of agreement between the software vendor provider and a company, whereby the vendor provides maintenance and support services for the specific software application.

Trade-off is the replacement of one item, idea, or concept for another of more or less equal value, particularly to affect a compromise.

3.3 Tailoring the ERP Selection Process

Selecting an ERP system for implementation is not like going to a retail store and purchasing a computer application for your home computer, and it is not just another computer project (Kuiper, 1998). Therefore, it is a major business decision that requires much thought and planning. The lack of in-depth assessment, evaluation, and detail can cause major financial damage to a company, and a potentially detrimental shift in business processes. That is why software selection should be influenced by operational experts in the business, and not necessarily just technical gurus. This will help to ensure the way a company does business is personified in the new system. Outside expertise, which most companies use when selecting ERP software, should be brought in as well, as they can bring knowledge and understanding of current software offerings. Therefore, buying an ERP system means accepting the software vendor's established interpretation of business process practices for a company's way of doing business (Umble et al., 2003). A company typically accepts the ERP vendor's assumptions, providing the opportunity to map or reengineer their business processes to conform to the ERP application. Consequently, a company should try to select and implement an ERP system that models its unique competitive strengths, while helping to overcome competitive weaknesses (Oden, Langenwalter, & Lucier, 1993; Hollocks, 2001). While 80-90% of a particular ERP application suite will be the same across different implementations, 10-20% will be different, and tailored to the specific needs of the corporate enterprise (Ptak & Schragenheim, 2004). Therefore, a company should concentrate on identifying its critical business needs, and the desired features and characteristics of the ERP system application suite. The ultimate goal should be to improve the business, not to implement software.

Tailoring the ERP selection process allows a company to fit the tasks and activities to their unique business strategy, size, industry, infrastructure, environment, and resources. This flexibility helps ensure that strategic, operational, and tactical goals are met. By planning ERP software selection systematically and thoroughly, companies can substantially increase the likelihood that they will identify ERP software and vendors that genuinely meet their needs (Verville, Palanisamy, Bernas, & Halingten, 2007). In the upcoming sections we will discuss key business drivers to selecting an ERP system, and the selection process steps.

3.3.1 IDENTIFYING KEY BUSINESS DRIVERS

What are the key business drivers for selecting an ERP system? Organizations have a variety of influences leading to a selection. A good portion of companies should expect to change or significantly upgrade their computer systems at least every five to seven years (Umble, et al., 2003). One key business driver is that an organization's legacy systems could be out-dated and/or unsupported. The organization must decide to either upgrade the system if possible, or go with a completely new system. Often times the legacy system can no longer be technologically supported because of its age. Additionally, replacing the old system with a new system reduces cost (Kale, Banwail, & Laroiya, 2010).

Another key business driver during selection is the need to create efficiencies across functional areas of the business, or the need for silo processes to work together within one system. Verville and Halingten (2002) illustrate the importance of this point with their example of ESC, a utility company, having difficulty compiling the reports for the monthly closing cycle. The process took a great deal of time each month. Four general ledger systems were used, with separate modules for budgeting and accounts payable. To conduct the monthly reports, manual effort was made to collect and interpret the available information. This cumbersome existing process short changed the value-added analysis the finance and accounting departments could have been doing with a more efficient and integrated system.

Competitiveness is an additional key business driver for selection of an ERP system. Businesses are in a fight to maintain competitiveness or, more aspiringly, to beat out competition in their respective industry. With the selection of an ERP system, cost savings can be discovered in the supply chain, efficiencies can be created in regards to customer service, buyer-seller transactions, inventory management, and effective decisions are more likely to be made with real time data delivered from an ERP system (Lollar, Beheshti, & Whitlow, 2010).

The decision to purchase commercial-off-the-shelve (COTS) ERP software or customized enterprise resource planning software is a significant key business driver. There is a cost trade-off that must be considered. Does the company want a plain vanilla configuration that cannot be easily tailored to the business, taken out of the box, and adopted? Or, does the company want to make a larger investment in customized ERP software that can be more tailored to the business, its needs, and the processes it performs? The company can save money if it uses COTS ERP software, but sometimes extra investment is needed because of the company's unique business requirements. When choosing to pursue a customized software option, it is important for the company to understand that the ERP software may need to be repaired or rewritten, as periodic updates occur. The company will incur significant ongoing costs that should be considered before making a customized solution commitment.

Since the Sarbanes-Oxley 2002 legislation in the United States, and legislations in other countries such as Canada, Japan, Germany, France, Italy, India, South Africa, Turkey, and the Netherlands have passed, businesses have been relying on ERP systems to help their fiscal compliance. An ERP system's ability to enable the business to be Sarbanes-Oxley compliant is an important key business driver to consider.

An ERP system provides an audit trail of who processed the accounting transaction and when it was done, by attaching a unique document number where applicable.

If a business is experiencing one or more of the below business conditions, an ERP system should strongly be considered for implementation. One or more business conditions may be a key business driver for the implementation.

- Rewire the organization for growth
- Ability to expand product categories across multiple brands
- Increase sales capabilities
- Drive down costs without compromising quality
- Support existing processes, e.g. manufacturing, purchasing, supply chain planning
- Enable the global landscape to quickly and effectively respond to evolving trade and supplier structures
- Support future integration of acquisitions and reorganizations
- Provide greater consistency of reporting and control
- Order management improvements
- Standardize and speed up manufacturing processes
- Reduce inventory
- Standardize HR Information
- Transportation/logistics cost reduction
- On-time delivery improvements
- Information visibility
- Standardization across the enterprise
- Dismantling inefficient legacy systems
- Business performance
- Customer responsiveness

3.3.2 ERP SELECTION PROCESS STEPS

There are many different ways and steps to selecting an ERP system. Software Selection is a somewhat different process than developing an application. Most companies follow a similar process with some minor deviations here and there. However, not all organizations will follow a structured approach. Considerations for the kind of approach the company chooses are size of the company, urgency of time to select and implement, kind of business or industry, scale of the software, and available human and financial resources to name a few.

According to Wybo, Robert, and Léger, (2009), a company's search strategy is "the order in which applications should be evaluated and the conditions under which the firm should end the evaluation and pick the solution" (p. 287). The company is trying to maximize benefits while minimizing costs. The most significant activity during application development is the capturing of all requirements and clearly defining them (Lauesen, 2004). In contrast, the most significant activity in selecting software is the process of evaluating all the alternatives. Siriginidi (2000) developed criteria to be considered when selecting an ERP provider, including the vendor's history and stability, and the support offered during implementation. A company should research the ERP provider's sales records for the past year, as well as third party integration of products with the ERP, and potential system upgrades.

Cisco Systems, Inc. took an entirely different approach to the selection of their ERP software. In 1993, Cisco ran on a UNIX-based software package that maintained its transaction processing (Austin, Nolan, & Cotteleer, 2002). Financials, manufacturing, and order entry systems were the functional areas utilized. At the time it was a $500 million company, but had its sights on being a $5 billion-plus company. The current system could not handle the growth, redundancy, reliability, and maintainability needed. The application had become too customized for Cisco's needs, and the software vendor offered an upgrade. However, the size of company the upgraded application could support was $300 million, and this would not be sufficient for a rapidly-growing Cisco. Cisco was constantly band-aiding their existing systems, experiencing an 80% annual growth rate, and suffering routine system outages.

In January 1994, Cisco experienced a major meltdown of their legacy systems so dramatic that it caused the company to shut down for two days, as Cisco's central database had become corrupt (Austin et al., 2002). The existing systems could no longer perform. Originally Cisco's approach was for each functional area to come up with its own solution, but they later came to the conclusion that it would take too much time. A team was put together to investigate options and replace the existing application. Cisco also felt it needed strong partners to help with the selection and eventual implementation. The newly formed team of about 20 people had a strategy of building as much knowledge as possible by leveraging the experiences of others. The team reached out to other large corporations, the "Big Six" accounting firms, and the Gartner Group (leading industry resource on ERP, other information systems, and manufacturing) to gather information. Cisco moved quickly by deciding on 5 packages within two days, and narrowed the candidacy to

two after one week. One of Cisco's big considerations was that they wanted to choose a vendor that was not smaller in size than their own company. Request for Proposals (RFP) went out to the top two vendors and in the meantime, Cisco visited a series of selected-vendor reference clients. A three-day demonstration that included a sample of Cisco's data was requested from each vendor, and the vendors explained how Cisco's requirements would be met or not met. Throughout this time, the cost had not even been considered. It was not until the selection team met with the company's Board, that they ever considered the cost and time needed for implementation. The overall time from inception to final selection of a vendor took 75 days.

How is Cisco's selection process different than others? First, the time spent from inception to final selection was aggressive. Costs, time, and risks were not even considered until before meeting with the Board. Contract negotiations had already commenced with the chosen software vendor. Before going to the Board, and after negotiations started, the timetable and the budget for the project were decided on. Usually, the timeframe and budget are defined during the planning phase.

Typically, the ERP selection process can include the following steps (Relevant Business Solutions, 2010):

Typical ERP Selection Process Steps

- SELECTION OF THE ERP SELECTION TEAM
- COMPANY'S RESOURCES IDENTIFIED AND ASSESSED
- GOAL REQUIREMENTS IDENTIFIED
- IDENTIFY SYSTEM FUNCTIONALITY REQUIREMENTS
- ADDITIONAL ERP SELECTION PROCESS ITEMS TO CONSIDER

The ERP selection team is comprised of individuals from each of the functional areas of the business. The team made up of the best and brightest individuals who know the ins and outs of their departments. The team members will be cheerleaders for the positive change to the new enterprise system, leading the infusion of information sharing and integration. The reason behind the change to a new enterprise system, and the conditions that exist, will be communicated to the implementation team. The team will also need to understand what the end result should look like.

Identification and assessment of the company's resources is needed to ascertain what functional areas are the most critical to their strategic goals, and the anticipated company growth (Relevant Business Solutions, 2010). Some areas will be unique to individual companies; however, general assessment of personnel, technology, workflow, and performance measurements should be made. For personnel, an evaluation of how employees are currently used should occur, to determine the strengths and weaknesses in their respective areas. The current company technology and infrastructure are important for evaluating whether changes need to be made to accommodate company growth. The current crucial processes and workflow should be analyzed to assess if changes should be adopted. Additionally, the business processes and workflow should be evaluated for future company growth and whether it can be sustained. Success should be measured to determine how the company is performing, but also to establish the company's growth potential.

The requirements for meeting company goals and success must be determined. The requirements will be used as guidelines during the process of selecting an ERP system. The core competencies of the business, the current limitations or problems with the business, and the implementation requirements for the ERP software provider are three steps involved in the process of determining goal requirements.

Relevant Business Solutions (2010, p. 5) suggests the following in terms of additional items to consider:

- Will a solution that is industry-specific in design be a better fit than one that is generic?
- Is the vendor's product scalable to accommodate rapid or unexpected growth?
- Are the solutions that are under consideration configurable to meet the specific needs and business processes that exist now, as well as new ones in the future?
- Is the solution flexible, so that it can operate on a variety of IT platforms to accommodate possible changes in the future?
- Are the product functions and features available now? If not, when will they be available and how important is it to have that function or feature?

3.3.3 ERP SELECTION OVERVIEW DIAGRAM

The typical ERP selection process steps are a part of the phases of selecting an ERP system. The presented phases mirror the same stages or phases for project management and are used to simplify the selection process.

Planning, request for information, evaluation, and selection phases are not linear or circular in nature. In the diagram, the phases overlap. They are iterative, meaning each phase may need to be revisited and tweaked throughout the process of selecting the ERP system.

3.4 Planning Phase

Let's break down these phases even further. The first phase is the Planning Phase. What steps must be taken when developing a plan? What elements should be considered? During this phase a plan needs to be developed, an evaluation team should be formed, and a feasibility analysis must be conducted. Forming the business objectives, comprehension of changes, project risk understanding, strong leadership, and budget watching are imperative at this phase (Wagle, 1998). The planning phase is one of the most critical phases of the process. In general, this is the phase where many companies fail regardless of whether it is selection of an ERP system, implementing a new or updated system, or some other project. It is important to make sure the checklist items have been accounted for, all requirements have been gathered, and the changes that may potentially impact existing systems or processes have been analyzed. Also, a vision is created to provide an explanation of why selection of an ERP system is considered (Umble, et al., 2003).

A feature/function list is established to provide understanding of what the company wants and needs in a new ERP system. Verville and Halingten (2002) suggest a company examine the participants for each phase, specifically who, acquisition strategies, evaluation criteria, requirements, and an assessment of the present status.

According to West and Shields (1998, p. 5-6) management should consider and answer the following questions before the finalization of selecting an ERP software package is made:

- What are our business strategies and plans for the next three to five years?
- How are we currently using technology?
- How is technology being used by our competitors, customers, and suppliers?
- What new technologies are being used by other businesses and industries?
- What are the capabilities of our current Information Systems (IS) department?
- What are the issues for using technology in the organization?
- What is the vision for how technology should be used by the organization over the next three to five years?
- What are the IS strategies for achieving that vision?
- What projects are needed to implement the IS vision and strategies?

Further questions should be considered such as (Mandal & Gunasekaran, 2003):

- At the functional area operational and managerial levels, what are the specific information needs?
- How are the existing systems going to integrate with the proposed new ERP system?
- What will be the new ERP system adaptation schedule?

Conducting a feasibility analysis for the project is also part of the planning phase. A feasibility analysis provides an evaluation or analysis of the potential impact of a prospective project (George, Batra, Valacich, & Hoffer, 2007). The analysis aids the evaluation team in deciding which system to choose, and also compares the current and proposed systems to one another. There are multiple evaluation categories, yet most companies will use operational, technical, economic, and schedule assessments as the main areas of focus. Operational feasibility determines if the system will be used effectively after implementation (Shelly, Cashman, Rosenblatt, 2006). "Technical feasibility refers to the technical resources needed to develop, purchase, install, or operate the system" (p. 59). The projected benefits must be greater than the estimated costs for economic feasibility. This is commonly deemed as the Total Cost of Ownership (TCO). Economic feasibility will also include tangible and intangible benefits. Tangible benefits can be monetarily appraised. Intangible benefits are challenging to quantify in dollars, yet are key to the company. Schedule feasibility is the assessment of whether the selection can be made in a timely manner. So where does the information for the criteria and questions come from? Interviews with users of the existing system are conducted to gather information. It is important to ask the right people the right questions. Here are some example criteria that would be used and/or considered in a feasibility analysis (Shelly, et al., 2006):

Operational Feasibility

- Will the new system place extra demands on users or require operating changes?
- Will the new system create a workforce reduction? If so, what will become of the affected employees?

Technical Feasibility

- Are the necessary hardware, software, and network resources available? If not, can those resources be acquired easily?
- Does the proposed solution have sufficient capacity for the future? If not, is expansion possible?

Economic Feasibility

- Total Cost of Ownership (TCO)
- Tangible benefits
- Intangible benefits

Schedule Feasibility

- Has a firm timetable for the project been established?
- Will a fast-track schedule pose any risks? If so, are the risks manageable?

In a recent lawsuit, a major eastern US university claims that an ERP vendor failed to live up to the terms of the school's ERP installation agreement. This case demonstrates the level of misunderstanding that can exist between two parties when they undertake a complicated, joint ERP project (Babcock, 2011). The university selected an ERP vendor to provide an integrative solution for their student and administrative requirements, in addition to a new Web portal for better information access. Major issues arose when the ERP vendor did not adequately understand the technology and the steps needed to complete the project.

Several disputes between the university and the ERP vendor occurred early on in the project, as they attempted to implement a project management system for joint use between the university and ERP vendor. The solution failed, and the alternative solution proved to be ineffective. The ERP vendor left the project unfinished. The university had to complete the project through a second ERP vendor for an estimated cost of $15 million, while their existing project had cost overruns of approximately $20 million. The importance of selecting the right ERP vendor is quite evident in this example. Careful planning is necessary to accurately understand the feasibility of such an undertaking. After the planning stage comes to a close, the request for information phase begins.

3.5 Request for Information (RFI) Phase

Request for Information (RFI) is a key phase in the ERP selection process. Depending on the size of the company and its requirements the RFI and RFP can be combined to fulfill the same objectives. At this point in the ERP selection process the initial planning is completed and marks the beginning of the acquisition life cycle. The major planning activities to select a team are established, detailed objectives and goals are defined, and the feasibility analysis is done. Additionally, an assessment of the company's requirements is done, usually a very high process, and the budget is established for the acquisition effort. It is critical when determining the "right fit" that the ERP acquisition team has established its selection and evaluation criteria prior to contacting any ERP vendor or considering an ERP solution (Verville et al., 2005).

Typically, the RFI/RFP phase is when a company will identify a comprehensive list of ERP system vendors that potentially meet the requirements based on the selection and evaluation criteria outlined during initial planning. This RFI/RFP phase may be an interactive process, as the ERP acquisition team gathers information information on vendors from internal and external sources,

and eliminates those that do not meet their requirements. Internal and external sources provide a means to obtain information about potential vendors. Internal sources are usually sources within the acquisition company such as individual users, team members, consultants, and contractors (Verville et al., 2002). External sources are large professional research groups such as Gartner Group, Meta Group, and CSC Index. These are well-known and popular sources used to obtain information about a company for strategic decision making. Other external sources that may be used are tradeshows, publications, conferences, and the Internet. Another particularly valuable external source can be a company's industry competition. Companies in the same or similar industry who have successfully implemented an ERP system are an excellent validation of the ERP vendor's capability. Additionally, their experience with the ERP vendor can be reassuring, as well as being an extremely reliable and substantially accurate source of information. As with any part of the RFI/RFP phases, mistakes will be made. However, knowing the common pitfalls can help the ERP acquisition team to operate more effectively and efficiently. Kuiper (1998) cites the most common mistakes companies may make during this process.

> **Picking a ERP system without doing a targeted search**

> **Communication with ERP software vendors before requirements are defined**

> **Not starting with a large population of ERP vendors**

> **Taking too much time in the preliminary analysis**

3.6 Evaluation Phase

"The greatest enterprise system implementation failures seem to occur when the new technology's capabilities and needs are mismatched with the organization's existing business processes and procedures" (Umble et al., 2003, p. 247). For this reason, the evaluation phase is a significant phase in the selection process. The evaluation phase is the process of assessing the different vendor options. At this point many companies compose a scorecard, score sheet, or check off list for the assessment.

A number of criteria are decided upon, and then measured against prospective vendors. The number of items on the evaluation will vary from company to company. There will be some questions or scorecard items that all ERP selecting companies should have, and there will be others that are specific to that particular company. The evaluation and criteria used to identify the list of recommended ERP vendors should be based on a weighted value which includes five main categories: functionality, integration with other applications, ease of implementation, vendor strength and/or reputation, and cost (Verville et al., 2002). The company's assigned criteria weights reflect the level of importance. For example, if the company heavily values the ability to upgrade or expand the proposed system, then the company might assign it the weight of 30% and the other criteria may receive 10% each. The evaluation phase is done twice. The first time is to narrow down to four or six vendors to consider (Umble, et al., 2003), and then the second is to make the final decision. West and Shields (1998, p. 6-7) speak to a number of aspects to consider when compiling a short list of vendors:

- Who are the package software leaders in functional coverage, technology vision, and for delivering on schedule?

- Which vendors are profitable, will be around for the long term, and are investing a substantial amount back into their products through research and development efforts?

- How many companies like yours are in the installed base for the vendor, and how many installations have there been of the vendor's current software release?

- What are the support capabilities of the organization: training courses, 24-hour help lines, online documentation, bug patches and fixes, user group meetings, and implementation support through the vendor or reputable third-party organizations?

- What is the ballpark cost of the vendor's software, and what is a typical total cost of implementing these packages – including software, databases, hardware, and implementation assistance?

- What modules and functions are included in the current release of the vendor's package?

Performing a market analysis of the ERP vendors who are major and minor players in your industry is important. It may be wise to narrow the list based on criteria such as size of the vendor or industry type (Umble, Haft, & Umble, 2003). Different vendor types should be explored such as VAR, best of breed, and niche market to ensure diverse solutions are sought. Finally, comprise a list of four to six serious candidates where the strengths and weaknesses of each vendor are evaluated along with their

ability to be a "fit" with company requirements (Umble et al., 2003). The number of short list vendors can vary from company to company depending on their requirements, and how quickly a solution needs to be identified.

Market Analysis - Common Results
Adapted from (Verville et al., 2007)

- **Identify major and minor players in the ERP vendor market**

- **Comprise a list of technology solutions that meet the requirements**

- **Review Solution capabilities against requirements**

- **Ensure non-quantifiable requirements are addressed**

After a short list has been compiled, ERP vendor product demonstrations, a business case, and management commitment must all be created or obtained. The ERP demos require a scripted demo outline to be developed. Typically, scripted demos identify strategic company business processes, problems facing the company in certain organizations, or both (West et al., 1998). These scripted scenarios should identify key business processes that may be challenges with the existing legacy system that would provide substantial benefit to the organization if they were supported by better information and functionality. "What are the 10 to 15 key things that are difficult to do today with the current systems that would provide substantial benefit to the organization if they were supported by better information and functionality?" (West et al., 1998, p. 6). Most often, this separates the ERP vendors that are or aren't a fit with the company's business objectives and goals. The scripts should list the detailed steps, functions, and if available, sample data for a particular business process. It is suggested that the demonstration scripts be prioritized and keep short with eliminating important detail. Keeping to these guidelines allows the ERP vendor sufficient time to prepare the scripted demos, and puts emphasis on the most important business issues. Management and users of the current system should review and accept the scripts. This demonstrates that the selection process is business driven and not technology driven. Subsequently, the selection phase commences once the evaluation phase has been completed.

Many times a proof of concept is requested from a potential vendor. Typically, when the vendor list is narrowed to two or three vendors is when it is appropriate to solicit for this type of request. A vendor will put a lot of time and effort into the preparation of a proof of concept hoping to win a company's business. When the vendor demonstrates the proof of concept, close attention to the existing ERP system functionality and the amount of customization required to meet business requirement are important to ERP vendor selection.

3.7 Selection Phase

The ERP Selection phase culminates with a "final choice" or "recommendation" for an ERP vendor solution (Verville et al., 2002). Site visits (also called reference calls) are an important aspect of the ERP vendor selection process. It allows the acquisition team and other interested individuals to see first-hand a particular ERP vendor solution in operation. Keep in mind there are unique company processes that may appear to be similar, but vary based on the industry and process. For example, company size matters – performance and technology infrastructure can be different as you increase the number of users or the volume of transactions. The ERP vendor will usually provide a list of reference clients that a company can visit or call on.

Now the acquisition team has re-evaluated the potential ERP vendors as "fit" solutions. Further examination is now the total cost of ownership. All cost associated with acquisition is thoroughly scrutinized for the next step in the process. Clarification questions are posed; customization requirements are refined to understand impact, hardware infrastructure modification/additions are blue-printed, and ERP software maintenance (including support and upgrades) are dissected. If a RFP is needed, the proposal is prepared (see RFI for detail). Expanded detail can be added to the RFI outline to include specific terms and conditions, current and future costs, license agreements, and preliminary training and deployment plans.

The next step in the ERP selection process is to negotiate with ERP vendors to finalize the "recommendation" or "final choice". Negotiation will most likely entail discussions with a company's legal department and senior management or steering committee with accountability for the project's success. Do not expect this process to move fast. Several iterations of meetings and discussions almost always happen before final ERP vendor selection.

The final step is to arrive at the "final choice" or "recommendation". The acquisition team reaches a decision and gives a comprehensive report of the findings.

A decision is communicated with justified tangible and intangible benefits. A go, no-go decision is made to move on to the ERP implementation. In extreme cases, if necessary, reverse the decision, evaluate other ERP vendors, or renegotiate the contract.

3.8 Selection Trade-Offs

What is a trade-off and why should it be considered when selecting an ERP system? According to Dictionary.com (2011), a trade-off is the replacement of one item or concept for another that is of more or less equal value, particularly to affect a compromise. Trade-offs for ERP selection will vary by company. Here are some example trade-offs that a company may face when selecting an ERP system:

Customized versus Vanilla ERP system
Vendor Module Functionality Offerings
Scalability of System
Degree of Consultant Involvement

A company must decide whether a customized ERP System is more appropriate than the adoption of a COTS system. See section 3.3.1 Identifying Key Business Drivers for discussion on this trade-off. Vendor module functionality offerings are an additional trade-off. Vendors will have a portfolio of module capability to offer customers. The customers selecting an ERP must choose which vendor best serves the business functionality required. A trade-off may arise when deciding on which modules are selected due to constraints such as time, budget, or perhaps what vendor is selected. In addition, the scalability of a system may also be a trade-off consideration, as a company may be compelled to choose an ERP vendor based on this requirement and what costs or resources are involved. A trade-off could occur when a company considers whether the ERP selection will be handled by internal teams or external consultants. External consultants will be more knowledgeable based on past experience and will free internal resources; however, the consultant fees may be costly and the consultants may not be as familiar with the company or its needs. Internal teams will have knowledge of the company, but may not have the expertise or resources to put forth.
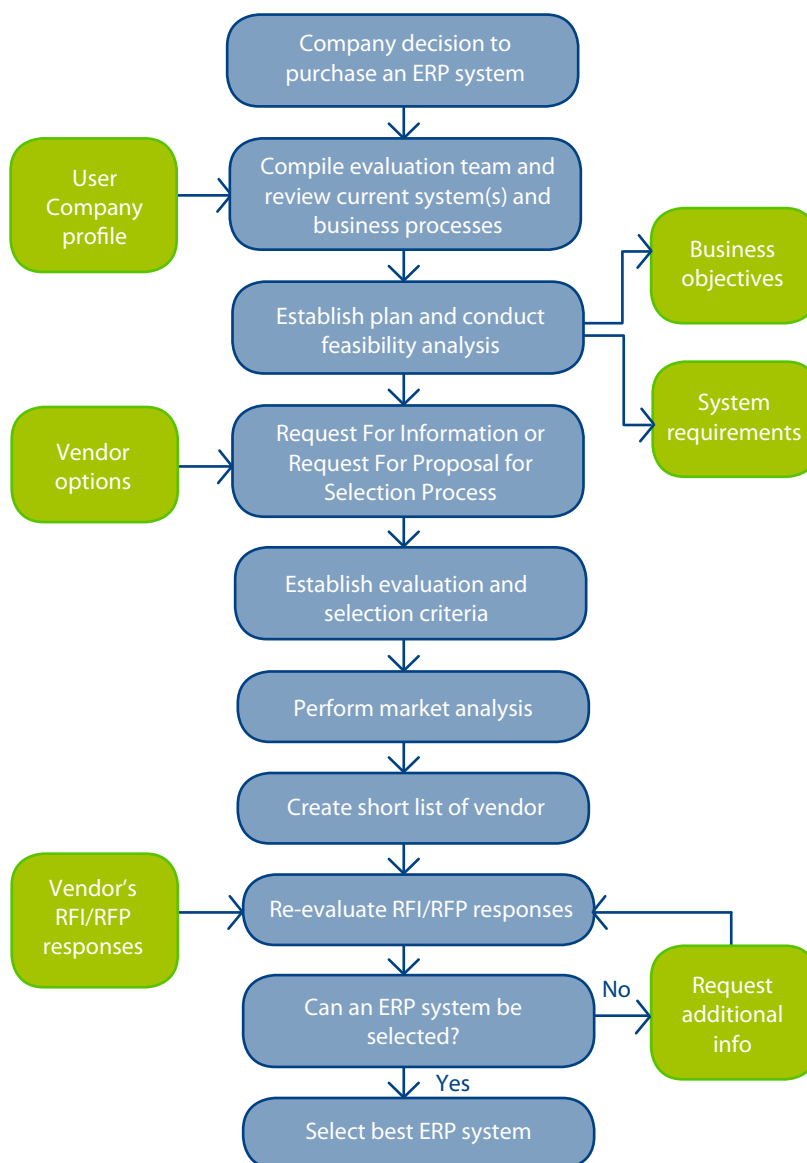
3.9 Conclusion

The ERP selection process can be challenging. With careful planning, thorough information gathering, and close attention during evaluation, the process can lead to a successful selection. Trade-offs, risks, and feasibility should be comprehensively investigated. Selecting the best ERP option may lead to increased efficiencies, better data integrity, and in turn higher profits. In section 3.10, you will find a flow chart of a preliminary ERP selection process to aid in the visualization and comprehension of steps involved.

3.10 Flow Chart of a Preliminary ERP Selection Process

Adopted from Karsak and Özogul (2009).

```
                    ┌─────────────────────────┐
                    │  Company decision to    │
                    │  purchase an ERP system │
                    └─────────────────────────┘
                                 │
  ┌──────────┐       ┌─────────────────────────┐
  │  User    │       │ Compile evaluation team │
  │ Company  │──────▶│ and review current      │
  │ profile  │       │ system(s) and business  │
  └──────────┘       │ processes               │
                     └─────────────────────────┘
                                 │                    ┌──────────────┐
                     ┌─────────────────────────┐─────▶│  Business    │
                     │ Establish plan and      │      │  objectives  │
                     │ conduct feasibility     │      └──────────────┘
                     │ analysis                │
                     └─────────────────────────┘      ┌──────────────┐
                                 │           └────────▶│  System      │
  ┌──────────┐       ┌─────────────────────────┐      │ requirements │
  │ Vendor   │       │ Request For Information  │      └──────────────┘
  │ options  │──────▶│ or Request For Proposal  │
  └──────────┘       │ for Selection Process    │
                     └─────────────────────────┘
                                 │
                     ┌─────────────────────────┐
                     │ Establish evaluation and │
                     │ selection criteria       │
                     └─────────────────────────┘
                                 │
                     ┌─────────────────────────┐
                     │ Perform market analysis  │
                     └─────────────────────────┘
                                 │
                     ┌─────────────────────────┐
                     │ Create short list of     │
                     │ vendor                   │
                     └─────────────────────────┘
                                 │
  ┌──────────┐       ┌─────────────────────────┐
  │ Vendor's │       │ Re-evaluate RFI/RFP      │◀──────┐
  │ RFI/RFP  │──────▶│ responses                │       │
  │ responses│       └─────────────────────────┘       │
  └──────────┘                  │                       │
                     ┌─────────────────────────┐  No  ┌──────────────┐
                     │ Can an ERP system be     │─────▶│ Request      │
                     │ selected?                │      │ additional   │
                     └─────────────────────────┘      │ info         │
                                 │ Yes                 └──────────────┘
                     ┌─────────────────────────┐
                     │ Select best ERP system   │
                     └─────────────────────────┘
```

References

Austin, R. D., Nolan, R. L, and Cotteleer, M. J. 1999. "Cisco Systems, Inc.: Implementing ERP," *Harvard Business School Case Study* (No. 9-699-022), pp. 1-5.

Babcock, C. 2011. Oracle Lobs $5.3 Million Countersuit at University". *Information Week* June, Retrieved from http://www.informationweek.com/news/software/enterprise_apps/229800001.

Burns, M. 2007. *How to Select and Implement an ERP System | ERP and More!* Retrieved from http://www.erpandmore.com/2007/02/11/how-to-select-and-implement-an-erp-system.

Gallagher, M. 2005. *Implementation of ERP Systems – A Significant Business Continuity Risk*. Retrieved from http://www.disaster-resource.com/newsletter/subpages/v82/meet_the_experts.htm.

George, J. F., Batra, D., Valachich, J. S., and Hoffer, J.A. 2007. *Object-Oriented Systems Analysis and Design (2nd ed.)*, Upper Saddle River, NJ: Pearson Prentice Hall.

Hollocks, B. W. 2001. "Enterprise Resources Planning and Beyond: Integrating your Entire Organization," *Journal of the Operational Research Society* (52:12), December, pp. 1408-1408.

Kale, P. T., Banwail, S. S., and Laroiya, S. C. 2010. Performance Evaluation of ERP Implementation in Indian SMEs. *Journal of Manufacturing Technology Management* (21:6), March, pp. 758-780.

Kalling, T. 2003. ERP Systems and the Strategic Management Processes that Lead to Competitive Advantage. *Information Resources Management Journal* (16:4), October-December, pp. 46-67.

Karsak, E. E., and Özogul, C.O., 2009. "An Integrated Decision Making Approach for ERP System Selection," E*xpert Systems with Applications* (36:1), January, pp. 660-667.

Koch, C. 2002. *Supply Chain: Hershey's Bittersweet Lesson*. Retrieved from http://www.cio.com/article/31518/Supply_Chain_Hershey_s_Bittersweet_Lesson.

Kuiper, D. 1998. The Key to a Custom Fit., *Evolving Enterprise*, (1:1), Spring, Retrieved from http://www.lionhrtpub.com/ee.html.

Lauesen, S. 2006. "COTS Tenders and Integration Requirements," *Requirements Engineering*, (11:2), May, pp. 112-122.

Lollar, J. G., Beheshti, H. M., and Whitlow, B. J. 2010. "The Role of Integrative Technology in Competitiveness," *Competitiveness Review* (20:5), October, pp.423-433.

Lall, V., and Teyarachakul, S. 2006. "Enterprise Resource Planning (ERP) System Selection: A Data Envelopment Analysis (DEA) Approach," *Journal of Computer Information Systems* (47:1), Fall, pp. 123-127.

Lindley, J.T., Topping, S., and Lindley, L.T., 2008. The Hidden Financial Costs of ERP Software. *Managerial Finance* (34:2), February, pp. 78-90.

Magal, S. R., and Word, J. 2009. *Essentials of Business Processes and Information Systems*, Hoboken: Wiley.

Mandal,P., and Gunasekaran, A. 2003. "Issues in Implementing ERP: A Case Study," *European Journal of Operational Research* (146:2) April, pp. 274-283.

Markus, L. M., and Tanis, C. 2000. The Enterprise System Experience -- From Adoption to Success. In Zmud, R. W. (Ed.), *Framing the Domains of IT Management, Projecting the Future...through the Past*. Cincinnati, OH: Pinnaflex Education Resources, Inc., pp. 173- 207.

Oden, H. W., Langenwalter, G. A., and Lucier, R. A. 1993. *Handbook of Material and Capacity Requirements Planning*, New York, N.Y: McGraw-Hill.

Ptak, C. A. and Schragenheim, E. 2004. *ERP: Tools, Techniques, and Applications for Integrating the Supply Chain*, Boca Raton, FL: CRC Press, LLC.

Relevant Business Systems. 2010. *The ERP Selection Process Survival Guide*. Retrieved from
http://www.altocim.com/whitepapers/ERPsurvivalguide.pdf.

Shelly, G. B., Cashman, T. J., and Rosenblatt, H. J. 2006. *Systems Analysis and Design*, Boston, MA: Thomson Course Technology.

Siriginidi, S. R. 2000. "Enterprise Resource Planning: Business Needs and Technologies," I*ndustrial Management and Data Systems* (100:2), pp. 81-88.

Trade-off. 2011. *Dictionary.com Unabridged*. Retrieved from Dictionary.com website:
http://www.dictionary.reference.com/browse/trade-off.

Umble, E. J., Haft, R. R., and Umble, M. M. 2003. "Enterprise Resource Planning: Implementation Procedures and Critical Success Factors," *European Journal of Operational Research* (146:2), April, pp. 241-257.

Verville, J. 2003. "A Process Approach for Selecting ERP Software: The Case of Omega Airlines". In Kosrow-Pour, M. (Ed.), *Annals of Cases on Information Technology* (pp. 26 – 45). Hershey, PA: Idea Group Publishing.

Verville, J., Bernadas, C., and Halingten, A. 2005. "So You're Thinking of Buying an ERP? Ten Critical Factors for Successful Acquisitions," *Journal of Enterprise Information Management* (18:5/6), pp. 665 - 677.

Verville, J., and Halingten, A. 2002. "An Investigation of the Decision Process for Selecting an ERP Software: The Case of ESC," Management Decision (40:3), pp. 206-216.

Verville, J., Palanisamy, R., Bernas, C., and Halingten, A. 2007. "ERP Acquisition Planning: A Critical Dimension for Making the Right Choice," *Long Range Planning* (40:1), February, pp. 45 - 63.

Wagle, D. 1998. "The Case for ERP Systems," *The McKinsey Quarterly* (2), pp. 130-138.

West, R., and Shields, M. 1998. "Up and running in nine months," *Management Accounting* (80:6), December, pp. 5 – 20.

Wybo, M., Robert, J., and Léger, P. M. 2009. "Using Search Theory to Determine an Applications Selection Strategy," *Information & Management* (46:5), June, pp. 285-293.

Additional Readings

Al-Mashari, M., Ghani, S., K., and Al-Braithen, M. 2008. "The Enterprise Resource Planning (ERP) Selection Process: Case Analysis and Proposed Framework," *International Journal of Business Information Systems* (3:2), pp. 120-139.

Deep, A., Guttridge, P., Dani, S., and Burns, N. 2008. "Investigating Factors Affecting ERP Selection in Made-to-order SME Sector," *Journal of Manufacturing Technology Management* (19:4), pp. 430-446.

Bernroider, E., and Koch, S. 2001. "ERP Selection Process in Midsized and Large Organizations," *Business Process Management Journal* (7:30), pp. 251 - 257.

Jacobs, F. R., and Whybark, D. C. 2000. *Why ERP? A primer on SAP implementation*, Boston, MA: Irwin McGraw-Hill.

Karsak, E. E., and Özogul, C.O. 2009. "An Integrated Decision Making Approach for ERP System Selection," *Expert Systems with Applications* (36:1), January, pp. 660-667.

Markus, L. M., and Tanis, C. 2000. The Enterprise System Experience -- From Adoption to Success. In Zmud, R. W. (Ed.), *Framing the Domains of IT Management, Projecting the Future...through the Past*. Cincinnati, OH: Pinnaflex Education Resources, Inc. pp. 173- 207.

Verville, J. 2003. "A Process Approach for Selecting ERP Software: The Case of Omega Airlines". In Kosrow-Pour, M. (Ed.), Annals of Cases on Information Technology (pp. 87 – 105). Hershey, PA: Idea Group Publishing.

Verville, J., and Halingten, A. 2003. "A Six-Stage Model of the Buying Process for ERP Software," *Industrial Marketing Management* (32:7), October, pp. 585-594.

Wu, J., Shin, S., and Heng, M. 2007. "A Methodology for ERP Misfit Analysis," *Information & Management* (44:8), December, pp. 666 - 680.

Questions

1. How might a small or mid-sized company's selection process for be similar and/or different from that of a large global corporation ?

2. If the final two ERP systems being considered met all the criteria and were similar in cost, what would some additional determining factors used to make the selection ?

3. What are some key things to learn from successful ERP selection? What factors would contribute to an unsuccessful selection ?

4. Suppose the recommendation is rejected by the stakeholders, how would you respond to this rejection ?

5. How would you structure the ERP selection team and identify the reasons for your ideas ?

6. Discuss the pros and cons of the different type ERP system vendors (i.e., VAR, best of breed, and niche market).

7. Identify key points to include in the SLA and SMA agreements. Support your reasons.